DOCUMENT RESUME

ED 053 081 SP 005 122

AUTHOR	Bush, Robert N.
TITLE	New Directions for Research and Development in Teacher Education.
INSTITUTION	Stanford Univ., Calif. Stanford Center for Research and Development in Teaching.
SPONS AGENCY	Office of Education (DHEW), Washington, D.C.
REPORT NO	RM-32
PUB DATE	May 68
NOTE	34p.
EDRS PRICE	EDRS Price MF-$0.65 HC-$3.29
DESCRIPTORS	*Educational Development, *Educational Objectives, *Research Needs, *Research Proposals, *Teacher Education

ABSTRACT

In planning new directions for teacher education it is reasonable to assume that education will become more rather than less important in the next decade, that technology will drastically alter our way of life, that there will be a continued trend toward urbanization, that teaching will become more individualized, and that teaching talent will be used in new ways. The three main ingredients to be considered are curriculum, teachers, and organization and management. The two kinds of problems needing research and development are 1) those of a general character which relate to the design and structure of the program and 2) those which are more specific and technical dealing with the skills and knowledge required for teachers. The major emphasis in the next decade probably ought to be upon developmental work. New programs should be used only for those who are committed to teaching, with the major effort devoted to the first few formative years in teaching. The last two years in training and the first years on the job need to be looked at as a whole, and the distinction between pre- and inservice education needs to be erased. The needed reform in teacher education is dependent on reform in the schools and on the treatment of teachers during their first few years in the school. (MBM)

ED053081

Sol.

STANFORD CENTER FOR RESEARCH AND DEVELOPMENT
IN TEACHING

U.S. DEPARTMENT OF HEALTH, EDUCATION & WELFARE
OFFICE OF EDUCATION
THIS DOCUMENT HAS BEEN REPRODUCED EXACTLY AS RECEIVED FROM THE PERSON OR ORGANIZATION ORIGINATING IT. POINTS OF VIEW OR OPINIONS STATED DO NOT NECESSARILY REPRESENT OFFICIAL OFFICE OF EDUCATION POSITION OR POLICY.

Research Memorandum No. 32

NEW DIRECTIONS FOR RESEARCH AND DEVELOPMENT IN TEACHER EDUCATION

by

Robert N. Bush
Stanford University

This memorandum is a draft for interoffice circulation. Corrections and suggestions for revisions are solicited. The memorandum should not be cited as a reference without specific permission of the author. It is automatically superseded upon formal publication of the material. The research and development reported herein was performed pursuant to a contract with the United States Department of Health, Education, and Welfare, Office of Education, under the provisions of the Cooperative Research Program.

"PERMISSION TO REPRODUCE THIS [redacted] MATERIAL HAS BEEN GRANTED BY

ROBERT N. BUSH

TO ERIC AND ORGANIZATIONS OPERATING UNDER AGREEMENTS WITH THE U.S. OFFICE OF EDUCATION. FURTHER REPRODUCTION OUTSIDE THE ERIC SYSTEM REQUIRES PERMISSION OF THE COPYRIGHT OWNER."

School of Education
Stanford University
Stanford, California

May 1968

SP005122

NEW DIRECTIONS FOR RESEARCH AND DEVELOPMENT IN TEACHER EDUCATION

I. Introduction

In his Notebooks From 1942 to 1951, Albert Camus says, "Modern intelligence is in utter confusion. Knowledge has become so diffuse that the world and the mind have lost all point of reference. It is a fact that we are suffering from nihilism, but the most amazing things are the admonitions to 'turn backward', return to the Middle Ages to primitive mentality, to the soil, to religion, and to the arsenal of worn out solutions. To grant a shadow of efficacy to those panaceas, we should have to act as if our acquired knowledge had ceased to exist, as if we had learned nothing, and pretend in short to erase what is inerasable. We should have to concel the contribution of several centuries and the incontrovertible acquisitions of a mind that has finally, in its last step forward re-created chaos in its own. That is impossible. In order to be cured, we must make peace with this lucidity and this clairvoyance. We must take into account the glimpses we have suddenly had of our exile. Intelligence is in confusion not because knowledge has changed everything. It is so because it cannot accept that change. It hasn't got accustomed to that idea. When this does happen, the confusion will disappear, and nothing will remain but the change and the clear knowledge that the mind has of it." He concludes, "there is a whole civilization to be reconstructed." This reflects the hopeful view of

those who see in the contemporary university the potentialities of its contribution to mankind now and in the future.

On April 11, 1962, the newspapers headlined a one-day strike of New York City teachers. At that time, I was speaking to a national conference of educators and indicated that this strike was symptomatic of the times and reflected an urgent need for a greater degree of self-determination and self-regulation in the teaching profession. The idea of striking, withdrawal of services, even to remedy deplorable conditions was widely assailed, and considered to be repugnant even among those who were striking at the time. I alleged then that it was sad commentary that teaching circumstances should have so deteriorated as to force such desperate action. The sobering question which I posed was whether there be a workable alternative. The burden of my remarks was that there was, but only if we acted with resolution, courageously and immediately. The strikers, you will recall, were roundly condemned from every side. Now, five years later, the New York teachers made the strike of 1962 seem puny by comparison, and the phenomenon of striking teachers appears prominently across the land. This time, however, the attitude of the teachers and the public is quite different. In their annual fall round-up of educational events, two or our most distinguished newspapers, the New York Times and the Christian Science Monitor, headlined these strikes as signaling that a professional teacher is emerging: better trained, surer of his own professional competence, and unwilling to have it hemmed in by unreasonable restraints and conditions which prohibit him from using his full professional competence in the education of children. It remains unfortunate that strikes are necessary, but they now appear

as a symptomatic clue that something constructive may be happening...that we may be on the verge of a new level of professionalization in teaching. It is not all clear, and it is not all positive, but it is of this precarious possibility that attention is devoted to.

Certain assumptions about the social and educational order must be made as a framework to discuss teacher education.

II. Some Assumptions about Society and Education-- To Establish the Framework

Assumption number one: Education and schooling will become more, rather than less, important. I assume also that teachers will be even more crucial in the future than they have been in the past. I doubt that most or much of the learning of our growing youngsters will be transferred to the learning laboratory station installed in the home or in other places, or in completely new institutions created for the purpose. The schools, I assume, will so alter their operations as to become more intimately related to many other aspects of life. But they will grow in importance, enroll more persons for longer periods than ever before. As the new technology develops, I predict alteration of the role of, but not a diminishing of, the strategic importance of the teacher. Teachers with much higher training will be required if the new technology is to be developed and used wisely. It will become increasingly true that the best laid plans of men and their machines can quickly and easily be wrecked by incompetent and poorly trained teachers.

Assumption number two: Technology will so alter our way of life that fewer and fewer persons will carry on what we formerly considered the productive work of the world, and more and more persons will turn to service occupations and will have greater leisure to cultivate their own interests.

A third assumption: A continued trend toward urbanization. I shall not dwell on the problems of the cities, but what I have to say will, I think, apply to the education of teachers in the cities.

Assumption number four: The computer will become a major factor in education. The computer will care for the tremendous amount of routine record keeping and other clerical work which is necessary in the operation of an effective school. It will make flexible schedules. In computer-assisted instruction, pupils will sit at individual stations for substantial amounts of time, especially on the cognitive and skilled side of education. This is not tomorrow, it is day after tomorrow. But it will surely come.

A fifth assumption: The schools will become unlocked, and teachers will have substantially more time to work with individual pupils and with pupils in small groups. These pupils will have substantially greater amounts of time to learn individually on their own and with small groups of their peers in meaningful situations. This means that the administrative structure of the school will be greatly altered. In the past, the school has served primarily as a custodial institution designed to keep youngsters off the labor market, off the street, and quietly out of sight. This will change.

Assumption number six: We will use teaching talent much differently from the ways we are now using it. There will be a differentiated staff with fewer highly

qualified persons at the top of the educational pyramid, and a large team of persons with lesser training working under the direction of a fully qualified professional person. This is the person whose education I want to speak about today. This means, also, a greatly altered use of that half of our population now tragically under- and malemployed--namely, women. Their talents will be widely used on a part-time, more flexible basis with different levels of pay and different levels of training than is typically now the case.

These examples suffice to indicate the kind of assumptions on which to erect a thesis about teachers and the education of teachers. In considering research and developmental efforts needed to improve the educational system, three main ingredients must be considered. First, the curriculum, the materials of instruction, the tools to be used, the materials to be taught; secondly, the teachers, the professional personnel who are to conduct the schools; and thirdly, the organization and management, by means of which the right material and curriculums are brought together in a fruitful way by the properly trained personnel so that the pupils may benefit from the best possible education. All three elements are crucial; all need to be developed together. No one can be fully effective if the others are deficient.

This chapter concentrates on number two--teachers and their education. A brief footnote should however be inserted about one and three, new curriculums and materials of instruction and administration. In an interesting analysis which recently appeared in the Saturday Review about the educational services incorporated in the new regional laboratories, Professor Zacharias was reported to have indicated that he was joining in establishing one of the new regional laboratories because the schools and the teachers must be reckoned with if effective change is to

take place. He and his colleagues now seem to agree with many others that the best made materials and tools come to naught in the hands of incompetent, unwilling, or shackled teachers. If I remember correctly, B. O. Smith stated in a conference several years ago at Ohio State University that in his studies of educational innovation the only lasting changes in American education were those that had been accompanied by the preparation of some specific kind of new materials of instruction and new tools. Vigorous work must continue along these lines. Fortunately, new forces in our industrial and publishing world are combining their efforts to fashion these new and better tools. We are here to talk about developing professionals who can effectively put these new tools to constructive use. Until we have better materials and better teachers we should not spend undue time considering organizational and administrative patterns. But we cannot neglect this area either, because already we have better teachers and materials than our present school organizations are using. It is unfortunately accurate to state that most schools as now organized and administered tend to stifle the opportunity for learning and teaching. They are operated far too much for administrative convenience and custodial care, rather than for educational requirements. Fortunately, here, too, we have examples of schools that are breaking out of these patterns. It is important for us to move forward on this front as well. As tempting as it is to spend more time talking about area one and area three, I now turn to the problems directly related to teacher education.

Attention is directed toward two kinds of problems which need research and developmental work in the field of teacher education. First, are those problems of a more general character which relate to the design and structure of the program

of teacher education. How long will these programs be? Where and when shall these students be admitted? How will these programs be financed? And how can they be attuned to general social and educational trends? The second series of problems are more specific and technical. They deal with questions as to what specific skills and knowledges are required for teachers. What kinds of training programs will be needed to develop them, and how can they be evaluated? What should be the relationship between the practical and theoretical components? Both the general and technical questions must rely more upon research and development than they have in the past. Fortunately, some new agencies and new resources are available for this purpose.

III. Some General Problems Concerning Teacher Education: Structure, Organization, Emphasis

At long last explicit attention is being given to problems of teacher education. Congress has seen fit to enact a law specifically focused upon the preparation of the professional personnel to staff the educational enterprise. The United States Office of Education with its increasingly prominent role in American education is, I hope, seriously considering the establishment of a division that will give direct attention to teacher education, rather than relying, as it has in the past upon a dispersed collection of a few persons giving part-time attention to the problems of teacher education. Dr. Bigelow's division which isn't clearly labeled teacher education may be such, I know not. Almost a decade has now passed since the Ford Foundation undertook major grants in teacher education at the elementary and secondary level, and it is now seriously tackling problems at the collegiate

level, which I wish to speak of in a moment. Two of the newly established research and development centers are concerned with the problem, and at least half of the regional laboratories have defined teacher education as a major mission. If this greater explicit attention and augmented resources are really to bear fruit, we must have some broad new designs for teacher education which are cast from new molds, and then subjected to large-scale research and developmental effort.

In our new burst of energy, for which I am thankful, we must tackle the education of teachers at all levels, not just in the elementary and secondary schools as in the past. The whole spectrum from pre-school through the university needs scrutiny. "Teacher education" must no longer be something which is done only to innocent and unprotected elementary and secondary school teachers. This and the next decade will be marked, I predict, for its significant advances in the field of educating college and university teachers. If for no other reason, the students, with properly increasing power in university governance, will force it. Whether it will be necessary to shame them, to bully them, to bribe them--and we will probably have to use all three--the university faculty will come to accept teacher training for themselves. Beginnings are already evident.

The problems and issues confronting teacher education at each of the different levels are somewhat different. But they do need to be seen as a totality for what happens at one level is not unrelated to what happens at the other level. The manner in which a teacher has been taught during the course of his entire schooling, especially in the universities, is one of the most influential ingredients in how he subsequently teaches. As professional training becomes more powerful, I think this condition may decrease, but it is still going to remain a powerful de-

terminant. Morton Deutsch warned as early as 1962 that though the explosion in knowledge that is reshaping our intellectual, political, cultural, and military environment has been stimulated by research initiated in the universities, "paradoxically, the colleges and universities have been relative laggards in applying scientific methods to the understanding and evaluation of their own functioning." Nevitt Sanford of my own institution writes in 1967 that, "Graduate schools from which our teachers come, pay almost no attention to teaching. It is surprising to find that in spite of deteriorating situations, members of college faculties seldom talk about teaching, and what it is like to be in a classroom, what one is there to do, or how one is to deal with this or that situation." The most penetrating observation on this question which I have encountered is that of Sir Eric Ashby in the Introduction to Decision Making in the Academic World, where he lays bare with refreshing but ironic clarity the situation: "All over the country, these groups of scholars who would not make a decision about the shape of a leaf or of the derivation of a word, or the author of a manuscript without painstakingly assembling the evidence, make decisions about admissions policies, size of universities, staff-student ratios, content of courses, methodology, and similar issues based on dubious assumptions, scrappy data, and mere hunch. Although dedicated to the pursuit of knowledge, they have until recently resolutely declined to pursue knowledge about themselves." Dr. Weidener, in his The World Role of Universities, has stated that, "The greatest professional shortcoming of American professors abroad was their incompetence as trained educators. Most had had little opportunity to reflect about higher education as a whole either at home or abroad before their assignments overseas. American professors seldom have had any formal training in American

or comparative education." Most of what I now turn to relates to the needs of teacher education at the elementary and secondary school level. But I am impelled at this juncture to underline the need for assigning a high priority to the formation of university teachers.

We need in this decade to take a major step toward the full professionalization of the preparation of teachers. The length of training needs to be markedly increased. The rigor of the selectivity needs to be sharply stepped up. No person should be given the opportunity for training unless he is fully committed. The wastage of those referred to--that fifty per cent of those in teacher education will not be teaching in five years--is shocking. The numbers, admittedly, should be cut back sharply, for we cannot thoroughly train so many, and the training needs to be made more relevant. While certification or licensing needs consideration, it is not in my opinion among the most important aspects of the total problem. It is too weak a reed for us to hang any great hope on. Certification requires simplification, but this will follow upon reforms in selection and training, which the colleges and schools will control. The reform in medical education which took place early in this century came about through reforming the training program and the requirements for an acceptable M.D. degree. We badly need, in my opinion, a distinctive teaching degree in America. We do not now have such a degree. The Ph.D. is primarily a research degree, even though substantial numbers of those who take it go into teaching. It is remarkably resistant to reform. We ought, therefore, consider the development of a teaching degree comparable in standards with the Ph.D. and other professional degrees, such as those in medicine and law. It ought to be required for the fully qualified teacher at all levels--elementary, secondary, tertiary.

We should abandon the current misconception that because we seem to need lots of teachers, we must, therefore, try to mass-produce them. Reliance upon fewer, but much more highly trained persons with full commitment to teaching, requires acceptance of the necessity to alter the typical flat structure of the teaching profession. It assumes a supply of sub- and para-professional personnel available to work under the direction of fully qualified teachers. This idea is now being tested but only timidly. In my judgment, it merits large, five to ten year field testing. This might be one of the most significant steps that could be taken toward a massive upgrading of teaching.

The times demand and our knowledge and experience makes possible the mapping of several new designs for teacher education which consolidate the gains which we made over the past several decades, and which cut out invalidated traditional practices and moves us on to a much higher level of achievement. A recent statement from the United States Office of Education encourages belief that this is a possibility. They are proposing between five and fifteen new designs. I think this is probably on the high side, but the time has passed when requirements for the education of teachers can be formed in legislative halls by inexperts writing certification requirements. The time has passed when whatever a college wants to offer, however meager, will be tolerated in teacher education. We must have some national minimum standards that are met and enforced by professionally competent persons. This is the essence of what all the NCATE (National Council for Accreditation in Teacher Education) fuss was about and as John Mayor's impartial study made for the National Commission on Accreditation supported by Carnegie concluded, national accreditation is both desirable and necessary in teacher education. A new

statement of accreditation standards which should spell out the basic issues upon which these new designs should rest is about to be issued for discussion. I am hopeful that these will be much more relevant and flexible than previous requirements. But I must insist that as things now stand, looseness, rather than standardization, is the besetting sin. As things now stand, almost anything goes. If an institution wants to offer a program of a few hours as frosting on the top of the undergraduate cake before the person is given a full license to practice full-time as an intern, this is condoned often under the false label of "experimentation." The reform called for and the research and development necessary to support it, requires much more rigorous and systematic programs. The elements which ought seriously to be considered as we forge these new designs may be summarized as follows:

First, there should be a common entry point with rigorous screening. Students should not be able to wander into a teacher education program whenever the whim moves them, as is now too often the case. It is now possible, even in the same institution, to enter a program of training for teaching whenever you wish: when you first enroll as a freshman, as a sophomore, as a junior, as a senior, or as a student with a bachelor's degree. We need a few designs with established entry points which are rigorously enforced using high standards. As Paul Woodring wisely observed several years ago, it matters little how good the training program is if you get only mediocre people wandering in and out. We are getting better people from a broader range of the socio-economic spectrum and from a higher part of the intellectual range. It is what we do to them in training and the first few years out on the job that is the cause for some of our despair.

Second, each of these designs needs to be logical, coherent, carefully thought through with a rationale and sequence of its own. We are not impressed with programs that set forth a few courses which can be taken in the summer quarter and with few or no pre-requisites. Unfortunately, a number of the programs that I see "popping out" here and there are of this character.

Third, each design should provide a rational practice-theory continuum that is woven throughout the program from day one.

Four, the program should be sufficiently long to permit skill and wisdoms to be developed. My own preference is for a five to seven year program before full licensing.

Five, there is need for a major overhaul in the relationship between the training institutions and the schools, so as to permit a genuine partnership to develop. While the training program begins in the college, it must extend through at least a year of internship and two or three years of externship, with the senior teachers in the schools playing a major role. This is the period of teacher education that is most important and distinctive. Dr. Conant envisioned this in his report. The National Commission on Teacher Education and Professional Standards has been advocating this idea. The Carnegie Corporation has made some grants to this end. The new Federal legislation, we hope, may push us in this direction. The goal, on which we all seem to agree, remains alas, but a gleam in the eye, and not as yet a genuine reality.

Six, the general education, the subject matter specialization which teachers require prior to and as a part of their professional training, needs reform even more than that of the strictly professional component. I have not time to discuss

this now. It is not the topic. I mention it here briefly and in passing to emphasize that it must not be relegated to a place of secondary importance. If our young citizens coming through the elementary, secondary, and the collegiate schools are not as liberally educated as they ought to be, and there is considerable evidence to so suggest, it may very well be because their teachers have not been liberally educated, and no amount of reform in that brief part of the training labeled "professional education" can remedy this. Liberal studies need to be overhauled from top to bottom if the students who may prepare as teachers are to provide liberal education in the elementary and secondary schools. Much of what is wrong with English teachers, science teachers, mathematics teachers in the schools, also lies in the inadequacy of their subject-matter preparation which can scarcely be remedied by the addition of a few hours stolen from the professional component. Would that it were so simple. But the breadth and depth, as well as the manner in which they study their subjects, require serious attention in any genuine concern with teacher education.

Finally, these new designs must be genuinely internationalized so that they are not the victims of a narrow and parochial nationalism. This is perhaps one of the newest and most important ingredients in teacher education which has yet to be realized. Harold Taylor who has been at work on a study on this problem, has some interesting recommendations which we should pay careful attention to. No country can afford to take an attitude of "noblesse oblige" toward so-called underdeveloped countries. For as Philip Coombs stated recently, "Because of the vast changes that are shaping and re-shaping the world today, every nation, whatever its level of economic development, finds itself educationally underdeveloped and,

therefore, in trouble." It is my impression from a fair amount of experience of studying schools in other countries, both the so-called developed and under-developed that the commonality of our problems in teacher education far overshadow the differences. We all have a great deal to learn and to teach each other, and some of the most inhibiting factors in our own teacher education programs in this country, which we assume as given, simply are not a part of the structure in other countries. It will be necessary for us to internationalize our approach to teacher education if we are to meet the challenges which face us.

These are but a few of the general questions that require attention. Work on them must be pursued by many groups--private foundations, governments, professional associations--all need to collaborate, and large scale research and development efforts are required in which major questions can be considered, and necessary experimentation and development over a ten to fifteen year span of time provided. We need to stay with some of the reform proposals long enough to put them into full operation and give them a genuine trial and to collect systematic data about them. With a piecemeal, faddish approach which too often characterizes the educational efforts in this country, we do not sustain attention enough to accumulate the data necessary for making major policy decisions. The American passion for sudden accomplishment, which Emerson referred to over a hundred years ago, needs to be re-thought. Statewide programs such as the one that has been developing for a period in the State of Washington should be considered. Perhaps some inter-state compacts need to be considered for teachers tend not to stay in the immediate environment of the institution at which they were trained.

IV. Some Specific Technical Problems Concerning Teacher Education

More specific and internal questions concerning the professional component of teacher education also require attention in research and development. The major requirement is the need for a specification of the kind of teacher behavior which will produce the kind of changes in students which we have indicated it is the purpose of the schools and universities to bring about, and then the development of training programs which will produce these behaviors in teachers. While we must insist upon the necessary general and liberal education and subject matter specialization, which is required, and while we must insist upon the theoretical knowledge from the behavioral and humanistic studies which underlie the practice of our profession, our main attention in this component should be upon the kind of training programs which will produce the kind of teacher behavior which we need. The major obstacle in achieving what needs to be done here has been the erroneous assumption which Professor Sarason and his colleagues correctly alluded to in their volume on The Preparation of Teachers: The assumption that a knowledge of behavioral and humanistic materials and professional theory will produce a change in teacher behavior. The testimony from teachers who have been subjected to this knowledge, and substantial research evidence is overwhelmingly in the negative. There is little evidence that behavioral changes in teachers are highly correlated with the amount of professional and other knowledge which they possess.

The reform needed is the development of extensive clinical exercises in which teachers in training are placed with students in schools and universities for continuous prolonged observation where they have ample opportunity under the

supervision of expert practitioners to diagnose and treat learning difficulties individually and in small groups and to develop the specific kinds of skills, overall strategies and tactics necessary for successful teaching. The study of the specification of teaching behavior and training programs required occupies about three-quarters of the budgetary outlay in the Stanford R&D Center. In pursuing this we need to be aware of a falling into a too narrow approach to the study of teaching behavior. As we study the problem, we need to take two broad approaches.

The first is a clinical or case study approach which grows out of gestalt or field theory orientation. In this, an interdisciplinary team of specialists from the relevant disciplines in the behavioral sciences, subject matter disciplines, and education study the relationships of teachers and pupils in natural class settings, exploring with a multiplicity of techniques the classroom and all of its complexity. An essential characteristic of this approach is that it keeps in view the wholeness of teaching and learning in normal classrooms, while also permitting a scientific scrutiny of specifics, always in the context of providing services to help teachers to improve. In these efforts we have been, until recently, handicapped because of a lack of technological aid and specific techniques for collecting good classroom records.

This lack, I think, is now being remedied through a second broad approach which is analytical and experimental in character. New technological media have aided us indispensably in its development. It concentrates upon analyzing either through observations or tape recordings the on-going interactions of teachers and students. The aims of these studies are to isolate specific units of teaching and learning behaviors. One of the reasons, of course, we have not made more progress

in the education of teachers is the lack of a defensible standard against which to judge our program. In our efforts to define what is a good teacher, there is no end and with poor results. Part of the reason, of course, is that so little time has been given to the study of the phenomenon of teaching as it occurs in natural settings. Disproportionate energy in the past has been devoted to moralizing and speculating on what teaching should be, and relatively little on what it is. This emphasis happily is changing in many places across the country. Researchers are at work imaginatively obtaining good basic records of what is going on in the classroom. To cite only a few, Professor Smith is doing this work; Flanders in Michigan, Bellack and Schuler in New York, and until recently Taba in California. This documentation, some by audio recording, some by trained observers with carefully worked out schedules, is making a significant contribution toward describing teaching and its effects. What the teacher says or does, we can now link to what ensues in student behavior. The bulk of what is being done now in many of our programs across the country is on this exerimental, analytical, objective, and scientific side. The results are not striking, but they are measurable and noticeable, and by comparison with the past, they are encouraging. It suggests how strongly the tide runs in the scientific direction. It is certainly true of the R&D Center at Stanford. It is an emphasis long overdue and much needed.

An equal effort for reform on the humanistic and the artistic frontier, which is also long overdue, must be called for. This needs bolstering and improving and is just as important as the other. Both approaches need to take place simultaneously in the same setting so that they may interpenetrate and reinforce and correct each other. Each by itself has severe limitations which tend to disappear and turn to strengths when they are pursued together.

These new programs should attempt to spell out more specifically the kind of teaching behavior required, and then provide large amounts of practice, first, under strictly controlled and simplified situations, and then gradually out into less controlled situations in which liberal use is made of model tapes, video tape recording, immediate feedback, critique, repractice in a cycle until the competence in a particular skill has been developed. In the micro-teaching procedure which we developed in our laboratory in the teacher training program at Stanford this is the model. It is probably not as weak as some critics might suggest, nor as strong as we claim. It is based on the conception of the teacher as the director of learning, and his importance in shaping student behavior. The Far West Laboratory joins with the Stanford Center for Research and Development in Teaching in trying to perfect this approach.

Some weaknesses and limitations in current analyses of teaching require major attention. Fortunately, we are beginning to inaugurate some studies which indicate that students learn best in different ways. The Stanford R&D Center refers to a difference in aptitude for profiting from different modes of instruction. To keep the different modes of instruction more constant, programmed learning materials and "non-teacher" ways of teaching are used. The concept that students have different capacities for learning things in different ways has not been fully taken into account in teacher education programs and particularly in university teaching. This represents a promising line of development. Professors Snow and Cronbach and others in the Stanford R&D Center are working on this problem.

However, we must not continue to confine ourselves to the study of teaching as it now takes place, important as that is. We must at the same time keep our

eye on the future as to what is likely to be a shift in the role of the teacher and what this may mean for teacher education. This represents one of the newest most exciting but hazardous research and developmental efforts needed today. There is necessity for a redefinition of the role of the teacher which may well reshape the content of teacher education and the procedures by which we conduct it for a long time to come.

As big business and the Federal Government, with a formidable battery of modern technology, with rising crescendo crashes in upon our schools, our classrooms, and our teaching, a permeating sense of disquietude stirs within us. For some, an almost impending sense of disaster awaits as the new salesmen move into the territory. The problem is that both the public and the profession are uneasy: The public, reaching all the way from the parent and the citizen in the local community to the highest echelons of power in Washington. The schools are being asked to perform miracles. They are to make up for all the deprivation in the home. They are to solve the problem of integration and poverty. At the same time, the schools and universities are confronted with serious shortages of teachers and dollars with the "knowledge explosion" curriculums almost out of date before the ink on them is dry. These and other factors have conspired to produce a genuine crisis in American education and without a vigorous and creative response the quality of our schools and indeed the whole of American life will deteriorate. Federal Government has entered the arena because political leaders are convinced that the national welfare is at stake. Education has moved from the sidelines to become a major productive force, an investment rather than a consumer item. One of the critical questions is, can the computer, automation, and other facits of

modern technology be brought to bear to help solve some of the critical problems in education.

Business, the mass media, and the Federal Government are all converging to move into a sphere which until recently has been one for local action in which the individual teacher has considered himself to be free to cope with the problem as he saw fit. But in many ways he has been seriously limited from being able to cope with the problem at all. In the face of teacher shortages and financial crises school boards and taxpayers are intrigued with the economies that might be achieved if modern technologies might be moved into the schools. Employers in all fields have always been interested in machines to replace human labor, and employees have always resisted and been suspicious of them and even tried to destroy these machines. Much more than meets the eye lies in the current rising unionization of teachers, which is symptomatic of an uneasiness that faces us all. There is great beauty in the machine programmed materials, especially when you think of their possibilities in the schools. The machine has no temper. It does what it is told with no argument. It has endless energy and never gets tired. It will forever repeat dull, routine tasks without becoming bored or dissatisfied. It has no prejudice. It will treat equally the slum child in the central city and the affluent child. Most important, it can be junked, thrown away when it is worn out or when it becomes obsolete. These are an attractive set of propositions looked at from the point of view of the administrator, the board of education, or even the public. Interesting experiments are going forward in this country and abroad. In American Samoa, for example, where America for so long shamefully neglected education, we are testing whether a handful of excellent teacher can, through the use of tele-

vision programs, radically improve the education in the whole country. One of the most thoughtful of the Colombian educational leaders, Alphonso Ocampo, the Rector of the University reiterated this last year in somber tone, "We are falling behind. With all of the additional monies that are being poured into my country, we are literally falling behind. You are falling behind too. Unless there is some radical application of technology to overcome the snail-like pace at which we are producing teachers and manning our schools, the results are going to be disastrous. If it is disastrous for us, it is going to be disastrous for you, too."

We are further troubled because of radical changes taking place in our society. New and troublesome concepts are already beginning to affect the way in which we have organized our society. Margaret Mead points to the fact, not yet considered seriously, that we are no longer confronted mainly with a production problem, that distribution is more crucial today. The cost of preserving our affluent society, she states, is to get over the outworn idea of an industrializing society that in order to share in society's wealth, one must do productive work. Several years ago, when I was in the Soviet Union, they were talking about "free bread". The idea that a citizen must work in order to be able to live and to share in the wealth produced is an idea which Mead avers we must change if we are to preserve affluence. Larger and larger numbers will stay in school longer, have a shorter work life, retire earlier and do less productive work, and still share fully in the fruits of society. These are bothersome concepts. Preceding generations were taught that one must but should work hard in order to share in the fruits of society. But, now with automation lifting heavy production off our backs, we may at long last have enough people freed to care for other people. Personal

services for everyone. Automation can, however, be dehumanizing unless it is managed sensibly. The old idea that technology creates more jobs than it destroys is no longer true. The radical nature of technology is such that there will be fewer jobs and less work of a particular type for humans. A further adjustment must be made in the obsolete idea that once trained, one is trained for life. Many, perhaps most, occupations will require retraining two or three times. We shall have to rid ourselves of the idea that one cannot re-learn. This applies forcibly to the changed role of the teacher.

The role of the teacher as it has been studied over the past decade with an interdisciplinary team of researchers may be briefly described as follows. The teacher perceives his main role to be that of purveying knowledge to students, to be a director of their learning. But this important work is often interfered with by many irrelevant forces including administrators, laymen, and parents who often force teachers to do things that they know should not be done and who keep them away from the job of purveying knowledge. The teacher further perceives that he should keep youngsters under direct control at all times. So does society. Laws are passed to insure that no student shall be out from under the eye of a fully qualified teacher at any time during the day. The teacher is taught and tends to believe that he should do the whole job by himself--make the tests, grade the tests, return the results, interpret them, mark all the English themes, teach all of the subjects, in brief, do everything by himself. While he will accord others some say in the selection of what is to be taught, how it is to be taught is strictly his own affair, not subject to scrutiny by anybody else. The classroom is his castle. The administrator tends to accept most of this view as held by the teacher, but he adds

one important proviso. It is important for the teacher to teach youngsters, to teach them well, and to teach them something that is important, but he should do it in such a way that everybody is happy about it. The teacher tends to believe, the administrators and the community instruct him similarly that he should motivate and discipline the students and that in addition to purveying knowledge he should also be a model of good behavior and conduct and help, thereby, to shape the character and the moral structure of the student. It is furthermore conceived, in the primary school particularly, that the teacher shall teach all the subjects for a whole year, with students moving the following year on to another teacher who will teach all of the subjects. In the high school and college, the teacher is to teach one subject at a time in a fairly standard period of 50 minutes to be repeated five days a week for a semester or a year if he is to teach the subject at all.

There is much conventional wisdom bound up in all of this, which should not be discarded lightly. But it is conventional and it is culture bound. High schools abroad, for example, are not organized as the American high school. In elementary schools in some parts of the world, teachers stay with pupils for several years. In many foreign universities students take a class for a minimum of a year, being examined at the end of the period. The established roles, as just delineated, are now being challenged. We hear reports of teachers harmoniously dividing up the labor, in wall-les carpeted rooms that are filled with accoustical perfume. A new order seems to be moving in. What is going to happen? What should happen? What genuine possibilities exist and what new attitudes should be adopted and what demands ought we to make on these developments? If we fully use the computer, for example, as alluded to earlier, in the field of data processing, if we use them for building the

school and university schedules and exploit their possibilities for computer assisted instruction so that each student may have a substantial amount of time in an individual station each day where his lessons are individually paced and students receive immediate feedback; and where his learning difficulties can be diagnosed, errors corrected, and extensive research on learning processes take place.

With teachers freed from the bulk of routine, and with students spending substantial amounts of time on their own, working in individual learning stations, learning laboratories, and resource and study centers, the role of the teacher in the university as well as in the elementary and secondary school will change. We ought to be fashioning some teacher training programs now that will provide for a changed role. I see almost none of them on the horizon at the moment. Much of what the teacher has formerly spent his time doing and what he has been expected to spend his time doing--namely the purveying of knowledge and keeping pupils quiet and out of sight--may be done better with the new technology, and that the teacher's new and emerging role will lie elsewhere, mostly in the realm of interpersonal relations.

In the first place, if the teacher's role emerges as it should and can the teacher will be able to view the process of education as a whole, to understand each individual child as a whole in his setting. The teacher will have opportunity to confer and to work with individual students and to confer and work closely with parents, which has never really been accomplished heretofore. We are a little better in working with parents in the elementary than in the secondary school, but even in the elementary school the prevailing attitude is one of "toleration". We shall free teachers to work with students in small groups, to teach in small groups.

I do not mean reducing the class size from 35 to 30. I refer to groups of 5, 8, and 10. I wish to return in a moment to teaching of small groups, for this is where some of our most important redefinitions of the teacher's role may take place. Another important change is that the teacher, instead of doing everything for everyone, of feeling he must succeed with everyone and feeling guilty if he does not, and that he is the sole arbiter and judge of everything that goes on, is going to become the captain of a team rather than a lone operator. He will have machines, tools, materials, and other kinds of assistance available at his call and direction. He will be at the top of the educational pyramid rather than at its bottom where he has remained for these many years. There will be much greater specialization and use of assistants. With greater specialization at all levels, we shall need to guard against mechanization, to keep the process human and flexible. To self-guard against this a central role of the teacher will be to work with youngsters in small groups.

Teaching in small groups is one of the projects which has been undertaken at the Stanford Center for Research and Development in Teaching. Some speculative propositions have accrued from discussions and studies. Some troublesome questions arise concerning the ways in which teachers have been trained. Much if not most of the current training of teachers is antithetical to effective teaching in small groups. Most of what trainees are taught to do, and most of what they are learning to do, which is what they daily do in their practice is exactly what they should not be doing if they are conducting small group teaching as it should be carried out. In the first place, it has been assumed that teacher and student behavior is different from that which occurs in other contexts when the small group is genuinely

operating for the purposes that it should. We have made videotape recordings in classrooms where teachers now are teaching in small groups. As anticipated, the teaching is almost identical with that which takes place in regular sized groups and in large groups. The main role is as purveyor of knowledge, lecturer. It is mostly teacher talk. What is the appropriate purpose of teaching in small groups? The assumption is accepted that it is different from that which goes on in large groups. As a beginning, two unique purposes have been identified. The first aim is to open wide the channels of communication amongst the members of the group. This means on an emotional and social as well as an intellectual level. It means between student and student as well as between teacher and student. The second aim is to provide an opportunity for individuals to apply knowledge and experience gained elsewhere to new situations, the old problem of transfer: to increase the ability to apply knowledge and experience to new problems.

With that as a beginning, we have been attempting to identify the kinds of student behavior which we want to foster in these small groups and that are uniquely appropriate for the small group. The next step is to identify the kind of teacher behavior which might reasonably be expected to produce the kind of student behavior desired. We then need to determine the kind of training programs which may be capable of producing teachers who can behave in the appropriate manner.

Here are a few illustrations of the kinds of student behavior which have been specified. We want students to become genuinely involved in the activity. We want the individual student to be willing to put his ideas on the table, to be able to listen to what others, students and teachers, have to say about his contributions, both positively and negatively, and not to react defensively when his ideas are

criticized. We have not as well as in some other countries been able to separate the criticism of an individual's ideas from the criticism of him personally. We tend too much to take a criticism of whatever we say to be a personal criticism. It is important to be able and willing to put ideas on the table and to listen to what others say, and then to be able and willing to speak responsibly about another's ideas, to probe, approve, argue, and disagree. We want to have the student behave not just mainly for the teacher. According to almost all of the records we collected this seems to be most of what goes on in school. We call it "playing school." The students are trying to find out what the teacher wants and generally to give it to him or in some cases to cause him difficulty in getting it. We have lucid examples. In one recording, in attempting to model the behavior of the teacher who was trying to get students genuinely involved and reacting because of the relevancy of the situation, the situation was defined as: "We are going to select what we want to study in social studies. And after we have selected what we want to study we'll then select one of the topics and go ahead and study it." The group leader stopped after this brief definition. Quiet ruled for fifteen seconds, thirty seconds. The videotape records show the students beginning to squirm. The teacher sits quietly. After about forty-five seconds one compulsive person who can no longer keep quiet, says, "Well, uh, what about studying the origin of ancient civilizations?" The teacher replied, "Well?" And then another fifteen or twenty second period of silence and another compulsive student said: "Well, what about studying the origins of American civilization in Europe?" Is more necessary? They tried repeatedly to find out what the teacher wanted. Only very skillful teacher behavior finally brought them to the point where they were discussing hippies, drugs, the war in Vietnam,

and other matters that were uppermost in their minds. Most of the behavior observed in small groups, and in all others represents students "playing school" rather than being genuinely involved, in listening thoughtfully to one another. They hide. They do not feel free to put their ideas on the table. They want to dominate or to be dominated. A further behavior we aim for is to help the student accurately to perceive himself, who he is. We aim to help him to learn to feel comfortable in the face of uncertainty, ambiguity, and change, and to act constructively in the face of such circumstances.

These are but examples of the list of behaviors to be promoted uniquely possible in small groups.

If these be the kinds of student behavior we wish to develop, then what are the teacher behaviors that are most likely to produce the desired student behaviors? It appears to be almost exactly the opposite of most of what we are trying even with our experimental programs in teacher training at Stanford, where the aim in developing the technical skills of teaching is to teach teachers to reinforce specific kinds of student behavior in the Skinnerian model. The foregoing definitions are almost opposite to the Skinnerian model. The teacher instead of giving positive reinforcement for ever "proper" behavior takes a non-evaluative stance toward pupils' comments. He also in other ways tries to bring about an open environment for the group to operate in. The teacher needs, in an appropriate small group setting, to react sensitively to the ideas, the feelings, and the actions of group members, and to convey to each member of the group and to the group itself the worthwhileness of all contributions. It is important also in small group interaction for the teacher to alter his behavior appropriately for each phase in the development

of the life history of the group. In the beginning, the teacher behaves in one way; as he reaches a certain point, he behaves in another fashion, and as he comes to the end, he reacts in still another manner. This is not primarily "group dynamics" or "sensitivity training", where a small group is thrown together to work out its problems. Here the emphasis is upon responsible professional teachers teaching in small groups. The mode varies. It may at one point be necessary to get out of the way in order to get back in. Some teachers, for example, mistakenly aver that, if they talk too much they must move over to the side and let students take over. This is not the responsible role of which we speak. At this point, we are grasping for ways to train teachers to behave differently. We are groping in the dark, in new territory for the most part. To suggest in conclusion a few operational questions concerning these illustrations of experimentation, I have illustrated some of the directions. One troublesome problem is: who sets the task in the small group? How is it modified? Another is: how is work evaluated in the small group? The chief unique characteristic activity in a small group is discussion: not reading, not writing, not lecturing, not memorizing, not taking examinations, all of which now happen often in small groups.

Certain things ought not to be expected to appear in small groups. For example, it should not be assumed that what has happened in a previous large group meeting will be immediately transferred into the small group. Recall that one major purpose of the small group is to help individuals apply experience that they have gained elsewhere, maybe in the large groups, but perhaps out in the community or elsewhere. Another expectation is not to find discipline problems in small groups. When small groups are well run discipline problems simply do not

appear. This alone should be enough to convince American teachers. One of the most difficult lessons to learn is that everything that happens in a small group is relevant. If the topic gets off what was considered the main track, why did it get off? Who brings it back, why, and in what form? The modus operandi of teaching in small groups is more like that of modern jazz improvization than a Mozart concerto. Unfortunately too many teachers try to conduct small groups in the style of a Mozart concerto. For large group instruction this is appropriate, but small group teaching properly proceeds from the nature of the group and the problems and the ideas that emerge from the group.

V. Conclusion

A needed shift in emphasis upon research and development in teacher education should proceed along these lines. First, we must make a substantial effort to "uncourse" the professional training component. Much of it can now be programmed, and there should be no course that does not have its laboratory component which is as large, if not larger, than the other component. We should rely extensively on performance criteria through which students in training can, upon request, be observed to find out when they have developed the competence, rather than marching them through lock-step. We need to spend major time in developing clinical exercises and good teacher training materials which are now almost totally nonexistent. The training programs as now organized, for the most part, could not use these new materials, but they will not begin to try to use them until they are produced. These will consist not of new textbooks on educational psychology and general methodology, they will consist of packages that look quite

different from those that we now have. They will contain specific behavioral definitions of teaching, videotape and film models of both negative and positive instances, packaged of inservice and preservice courses with evaluative forms and specific instructions on how to use them, all coordinated. The Far West Laboratory is beginning to work in cooperation with the Stanford R&D Center on some of these. The R&D Center at Pittsburg with the regional laboratory in Philadelphia is also beginning to develop some of these materials. In addition to the development of these materials there is need to saturate these training programs with supervision, both from the universities and from the schools. This will require highly trained supervisors. For the most part supervision is now carried on in a commonsense way with little technical competence on the part of the supervisor. This means, in turn, the need for greatly altered conditions in the schools during the first few years of teaching. The year of internship and two to four years of externship where the beginner is learning to teach will require that the conditions be greatly altered during these first few years in the school. This is why the closest possible connection between teacher training in the universities and colleges must be tied in with conditions surrounding the new teacher.

We have a lot of experience, some of it quite recent, and some emerging ideas, practices, and materials, which will enable us to carry this developmental work forward. Out of this extensive developmental work will arise a series of basic issues and problems so that fundamental research will not be neglected. But the major emphasis in the next decade probably ought to be upon developmental work, because we have done very little developmental work in teacher education.

With powerful new programs of teacher education available, the critical question is upon whom shall they be used? They should be used on those who are committed to teaching, that we should not spend abnormal amounts of time, training, and money on those who are merely seeking a cheap insurance policy. Therefore, the major arena for significant research and development in teacher education will be upon the first few or formative years in teaching. The last two years in training and the first three or four out on the job need to be looked at as a whole. The old distinction between pre- and in-service education will need to be erased. The needed reform in teacher education thus is dependent upon a needed reform in the schools and upon the way in which teachers who are going into the profession are treated during their first few years in the school. Here it seems to me the spotlight of attention should be focused for the next decade.